In the Specification:

Please replace paragraphs [0004] through [0005] and [0047] through [0050] with the following amended paragraphs:

[0004] There are problems associated with the use of MWD tools, primarily related to their capacity for transmitting information. For example, MWD tools typically require drilling fluid flow rates of up to 250 gallons per minute to generate pulses adequate to transmit data to the surface of the well. Additionally, ~~surface~~ the amount of data transferable in time using a MWD is limited. For example, about 8 bits of information per second is typical of a mud pulse device. Also, mud pulse systems used by an MWD device are ineffective in compressible fluids, like those used in underbalanced drilling.

[0005] Wireline control of downhole components provides adequate ~~dada~~ data transmission of 1,200 bits per second but includes a separate conductor that can obstruct the wellbore and can be damaged by the insertion and removal of tools.

[0047] Yet another drilling component that can benefit from real time signaling and power, is a thruster 95. A thruster is typically disposed above a drill bit in a drilling string and is particularly useful in developing axial force in a downward direction when it becomes difficult to successfully apply force from the surface of the well. For example, in highly deviated wells, the trajectory of the wellbore can result in a reduction of axial force placed on the drill bit. Installing a thruster near the drill bit can solve the problem. A thruster is a tool that changes shape which includes a fluid actuated piston sleeve. The piston sleeve can be extended outwards and in doing so can supply needed axial force to an adjacent drill bit. When the force has been utilized by the drill bit, the drill string is moved downwards in the wellbore and the sleeve is retracted. Thereafter, the sleeve can be re-extended to provide an additional amount of axial force. Various other devices operated by hydraulics or mechanical can also be utilized to generate supplemental force and can make use of the invention.

[0048] Conventional thrusters [and] are simply fluid powered and have no means for operating in an automated fashion. However, with the ability to transmit high speed data back and forth along a drill string, the thrusters can be automated and

can include sensors to provide information to an operator about the exact location of the extendable sleeve within the body of the thruster, the amount of resistance created by the drill bit as it is urged into the earth and even fluid pressure generated in the body of the thruster as it is actuated. Additionally, using valving in the thruster mechanism, the thruster can be operated in the most efficient manner depending upon the characteristics of the wellbore being formed. For instance, if a lessor amount of axial force is needed, the valving of the thruster can be adjusted in an automated fashion from the surface of the well to provide only that amount of force required. Also, an electric on-board motor powered from the surface of the well could operate the thruster thus, eliminating the need for fluid power. With an electrically controlled thruster, the entire component could be switched to an off position and taken out of use when not needed.

[0049] Yet another component used to facilitate drilling and automatable with the use of wired pipe is a drilling hammer 96. Drilling hammers typically operate with a [stoke] stroke of several feet and jar a pipe and drill bit into the earth. By automating the operation of the drilling hammer, its use could be tailored to particular wellbore and formation conditions.

[0050] Another component typically found in a drill string that can benefit from high-speed transfer of data is a stabilizer 97. A stabilizer is typically disposed in a drill string and, like a centralizer, includes at least three outwardly extending fin members which serve to center the drill string in the borehole and provide a bearing surface to the string. Stabilizers are especially important in directional drilling because they retain the drill string in a coaxial position with respect to the borehole and assist in directing a drill bit therebelow at a desired angle. Furthermore, the gage relationship between the borehole and stabilizing elements can be monitored and controlled. Much like the rotary drilling unit discussed herein, the fin members of the stabilizer could be automated to extend or retract individually in order to more exactly position the drill string in the wellbore. By using a combination of sensors and actuation components, the stabilizer could become an interactive part of a drilling system and be operated in an automated fashion.